

LeCroy

SDA 11000 SERIAL DATA ANALYZER



**Total Solution for
Next Generation
Serial Data Analysis**



SDA 11000 | Serial Data Analyzer

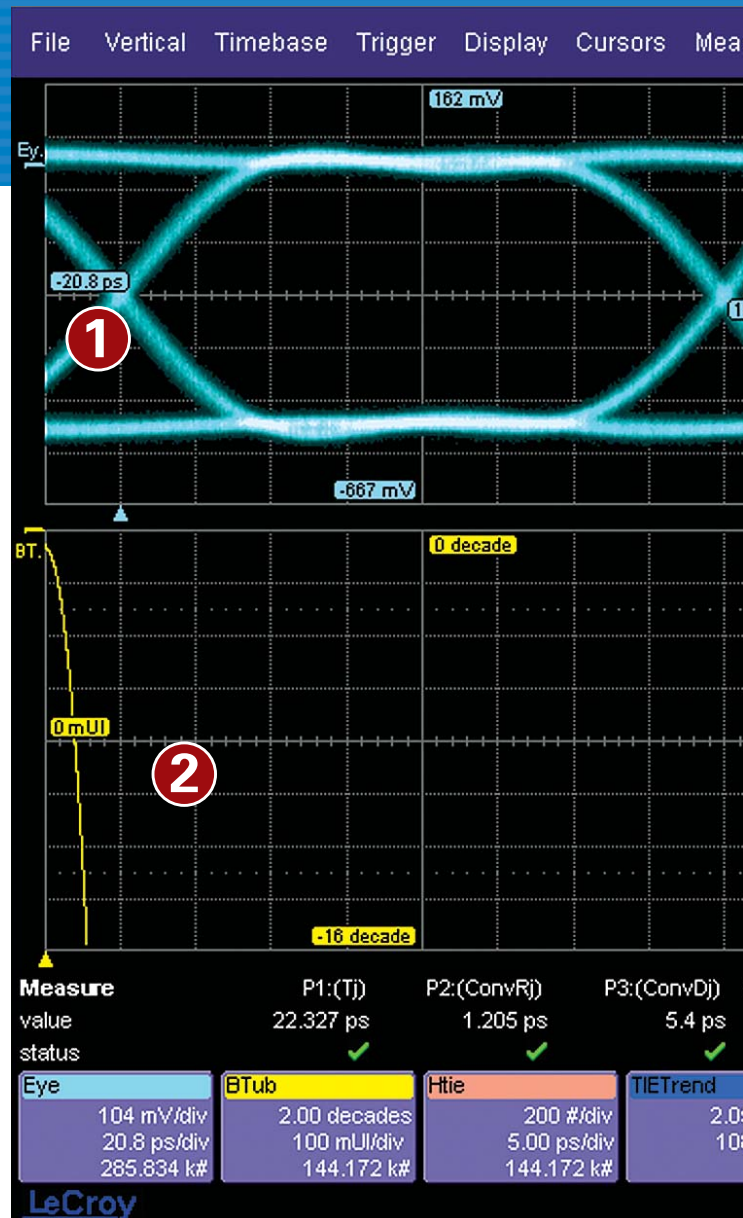
Dual 11GHz 40 GS/s
Quad 6GHz 20 GS/s

11 GHz

A Total Solution for Next Generation Serial Data Analysis

With serial data quickly becoming a dominant form of data transmission, fast and accurate analysis becomes a priority. The LeCroy SDA integrates all the key measurement and analysis tools into one device. Here are a few of the measurements that are part of this powerful analyzer's capabilities:

- Serial data measurements up to 6.25 Gb/s
- Supports testing of next generation serial data standards:
 - 5 Gb/s PCI Express™ Gen2
 - 4.25 Gb/s Fiber Channel
 - 6 Gb/s SATA III / SATA II
 - 4.8 Gb/s FB-DIMM
 - 6.25 Gb/s double XAUI
- Capturing up to 12 million UI in a single acquisition allows measurements on important low frequency effects, such as spread spectrum clocking and switching converter noise
- The latest LeCroy DSP technology brings you uncompromised uniformity in frequency and phase response, resulting in dependable eye pattern representation
- Configure PLL response in software clock recovery for any standard or custom requirement



1. Eye Patterns Show Mask Violations to the Bit (screen capture shows 6 Gb/s)

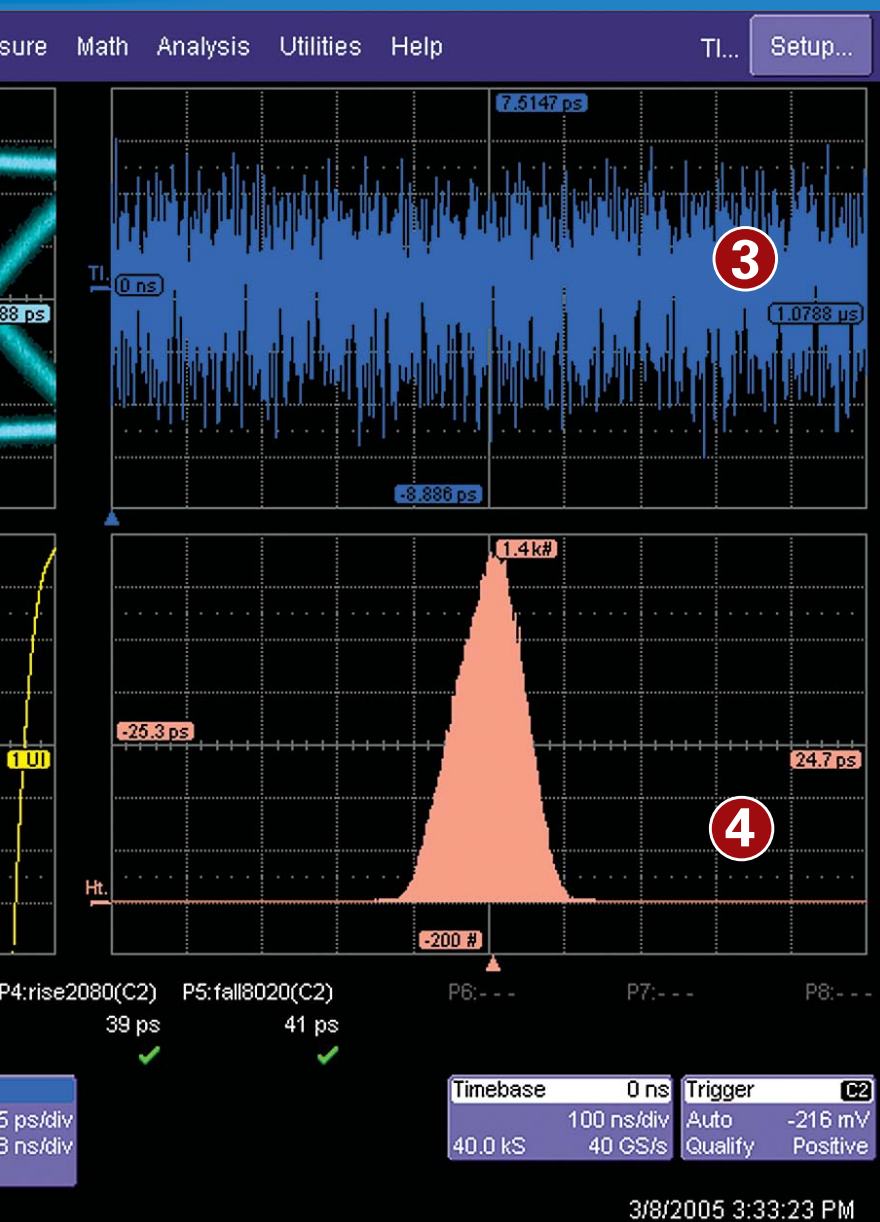
- Eye pattern measurement on up to 12 million consecutive bits ensures that even transient jitter and noise events are captured.
- Consecutive-bit eye pattern analysis allows for the measurement of the wave shapes of individual bits that violate the compliance mask (violation location).
- Fast update rate
- Very low measurement jitter (less than 350 fs rms, typical)

2. Jitter Bathtub

- The bathtub curve is extrapolated from a TIE histogram rather than from a jitter model. This produces results that correlate better with those from a bit error rate.
- Presents jitter as a function of bit error rate.
- Predicts maximum BER performance of system.

3. Jitter Trend

- Time domain view of jitter displays transient jitter events that can be missed by histogram approaches.
- Clearly shows any non-stationary jitter behavior.



4. Histogram

- Display of measured jitter histogram clearly shows any unusual jitter distributions such as bi-modal or non-Gaussian tails.
- By simply viewing the jitter breakdown (Rj, Dj), the raw data view shows jitter behavior that can be lost.
- This unprocessed display gives a high degree of confidence in the accuracy of the jitter breakdown and bathtub curve.

Critical Factors to Consider When Purchasing Your Next High-end Scope

LeCroy is Serious About Serial Data Testing

When it comes to serial data tests, LeCroy speaks your language. With more dedicated measurement algorithms and standard-specific tests, LeCroy is ready to meet your measurement challenges, right out of the box. Other manufacturers require an additional 15 to 20 thousand dollars of options to be only partially prepared for serial data analysis. The SDA 11000 comes with all the acquisition memory, jitter analysis, and real-time eye pattern analysis capability you need as standard features.

LeCroy's Bandwidth is Fully Supported by the Hardware

Remember, your usable bandwidth is not always the number printed on the front of the scope. Most other manufacturers' high-end scope families achieve their highest bandwidth by employing "DSP bandwidth boost." DSP bandwidth boosting may induce undesirable effects in the capture of your signals, such as pre-shoot, pre-ringing, ringing, and noise amplification. The SDA 11000 applies no such bandwidth boosting to achieve its 11 GHz. The analog bandwidth of the hardware in today's generation of high-end scopes is 10 to 12 GHz. Any more may be, well, ... just numbers on the front panel.

LeCroy's DBI Technology Promises to Get You to the Next Generation of High Bandwidth Scopes Faster

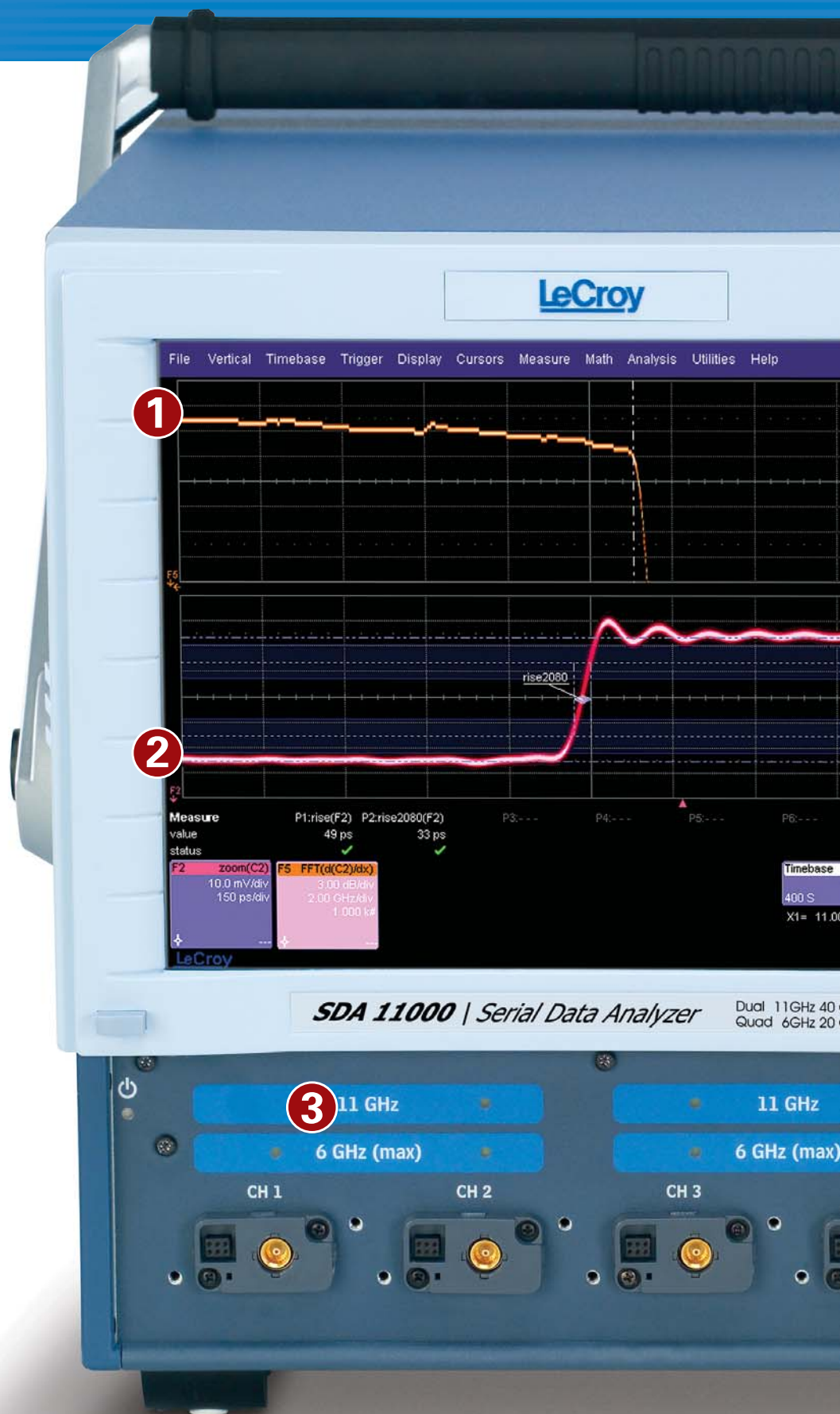
To take you to the next generation of high bandwidth scopes, serious improvements in sample rate must accompany advances in analog bandwidth. LeCroy's Digital Bandwidth Interleave technology is ready to take you to the next step. LeCroy's next generation SDA will provide 20 GHz of analog bandwidth, fully supported by long memory and the required 80 GS/s sampling rate. In early 2006, LeCroy will help you jump the power curve with its next DBI-based oscilloscope.

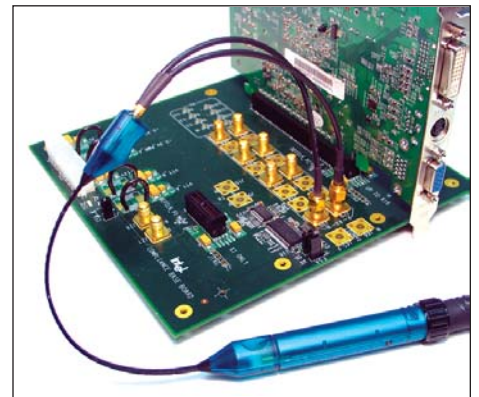
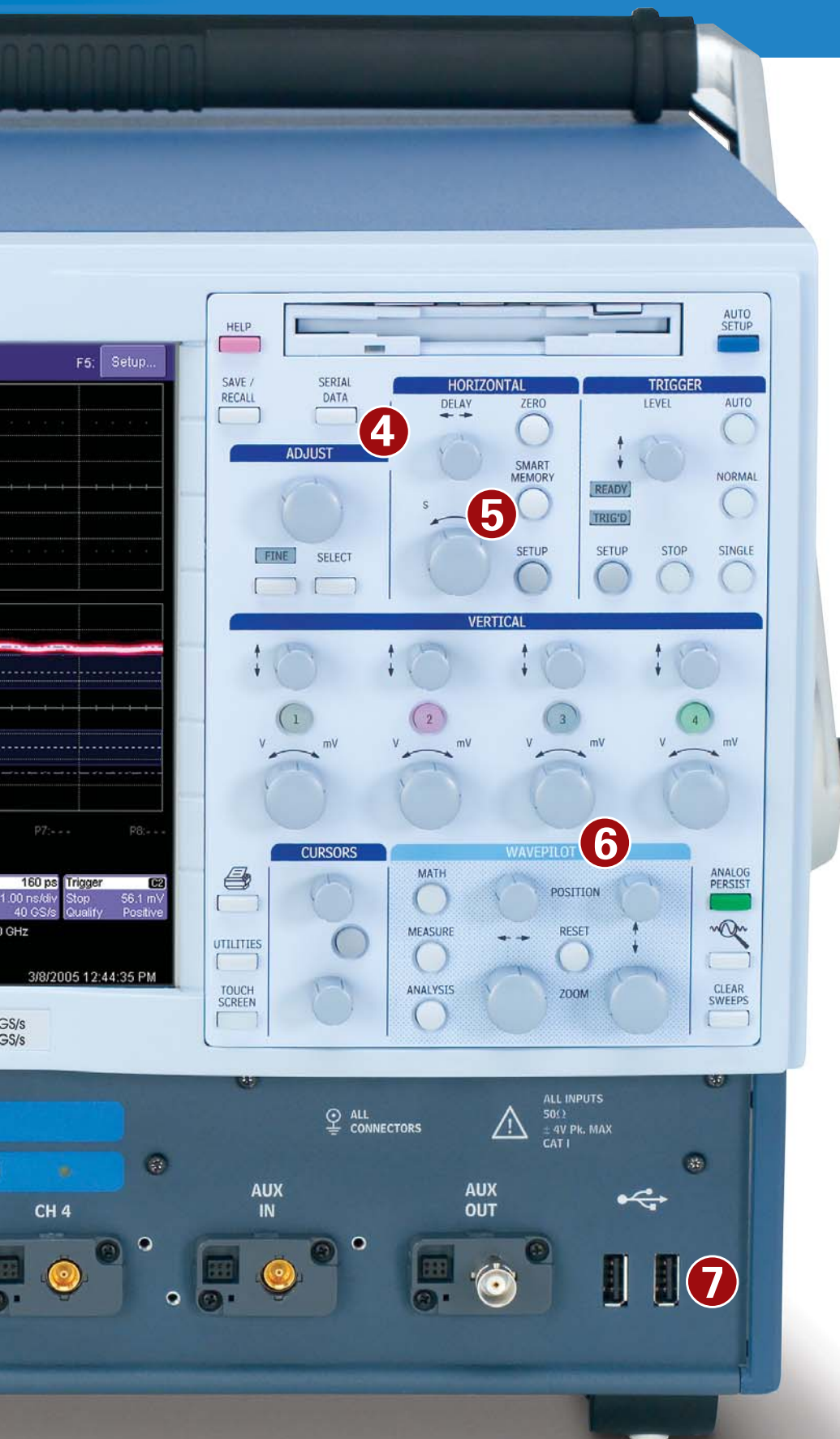
Powerful Scope Performance Supports Serial Data Analysis

X-Stream Technology—
Proprietary technology that
enables data processing
that is 10–100 times faster.

The SDA 11000 Features:

1. 11 GHz bandwidth
with tightly controlled
frequency response
2. 28 ps rise time
(20 to 80%, typical)
3. 11 GHz on 2 channels
6 GHz on 4 channels
4. One touch to Serial
Data Analysis
5. Sampling rates
up to 40 GS/s with
deepest memory
16M on 2 Ch/8M on
4 Ch: Standard
32M on 2 Ch/16M on
4 Ch: Option L
100M on 2 Ch/50M on
4 Ch: Option XL
6. Wavepilot – provides easy
access to powerful signal
analysis capabilities.
7. Front panel USB





D10000PS Differential Probe System (available Summer 2005)

The D10000PS is a high-performance differential probe system that complements the SDA 11000. The probe features extremely low circuit loading, fast rise time, and low noise. The probe system includes tip configurations supporting both direct solder in and SMA cable connections.

Advanced Analysis Tools

Turbocharge Your Jitter Measurements

Many different instruments such as sampling oscilloscopes, time interval analyzers (TIA's), and bit error rate test sets are used to evaluate the jitter in serial data streams. The SDA 11000 is the first oscilloscope to implement all of these methods. With a single instrument, the slight differences among methods can be viewed and understood. The SDA 11000 provides specific jitter measurements to meet all serial data standards.

Jitter Wizard

This feature automatically selects all of the critical instrument settings, ensuring the highest accuracy and repeatability.

- Sampling rate, level, bit rate, and pattern length are automatically detected.

ISI Plot

The ISI plot displays data dependent jitter contributions to the eye pattern for the second-to-last bit of a bit length, set from 3 to 10. This plot measures data dependent jitter without the need for a repeating bit pattern.

Edge-to-Edge Jitter

In this mode, timing is measured on data transitions relative to one another in the same way as a timing interval analyzer (TIA).

- Measurements can be displayed directly or compensated to correlate with phase jitter measurements.
- Tj, Rj, and Dj measurements can be made at specific UI spacings or for all spacings in the data stream.

Filtered Jitter

The SDA 11000 offers a filtered jitter mode to support ITU-T and SONET measurements.

- Band-pass filter with selectable upper and lower cutoff frequencies supplied.

N-cycle vs. N Jitter Plot

This display shows the rms jitter as a function of the UI spacing. It provides a very sensitive way of viewing periodic jitter effects. The minimum value of this plot gives the rms value of the random jitter.



ISI Plot

Averages the contribution to the eye pattern from samples with the same combination of bit values preceding and following the plotted UI.

Jitter Analysis: Rj, Dj, Tj

The SDA measures total jitter by extrapolating the histogram of jitter measurements. It includes the following three methods for determining the random and deterministic components to support all existing standards:

- **Conventional** – Deterministic jitter is measured directly and Rj is the difference between the total and deterministic parts.
- **Effective** – BERT-scan method using the bathtub curve to fit a “dual dirac” jitter model.
- **MJSQ** – Fiber Channel method using two Gaussian curves to fit the extremes of the measured distribution.



Synchronous N-cycle Plot

This display shows the data dependent jitter for each data transition in a repeating data pattern. The pattern is automatically detected from the data stream.



Pj Breakdown

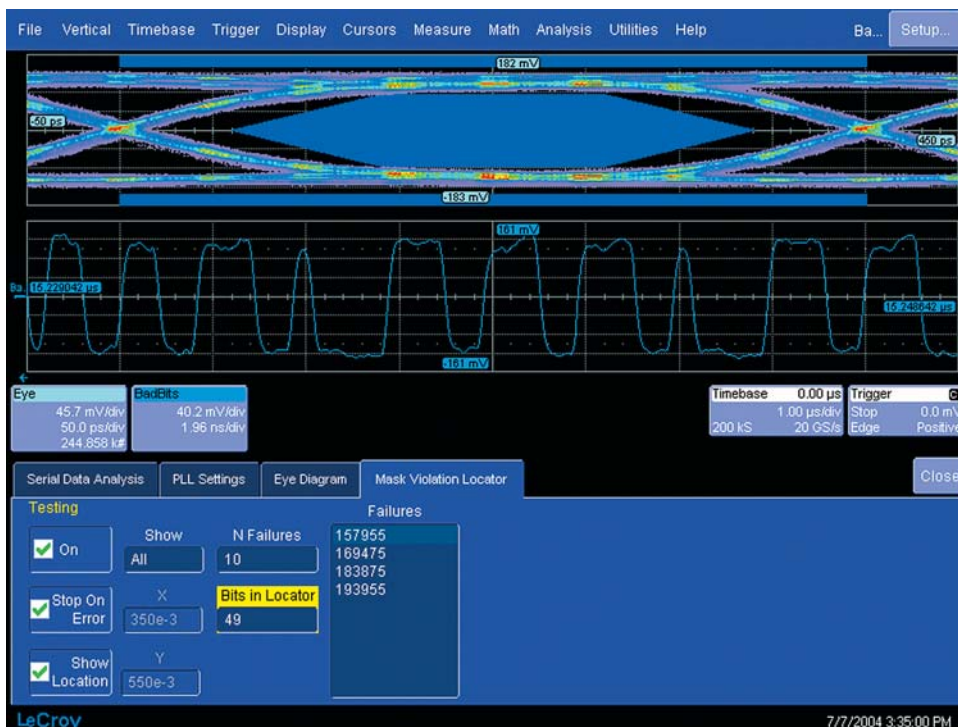
Lists the peaks corresponding to the frequency components found as periodic jitter.

A Sharp Focus for Eye Patterns

Eye pattern analysis is a widely used tool for assessing the signal integrity of serial data streams. The SDA measures eye patterns on a continuous record of up to 12M consecutive unit intervals (UI). A software-defined clock recovery algorithm is used to separate the record into segments that are one UI in length. The segments are then overlaid to form the eye pattern. Subsequent acquisitions are accumulated with the previous ones.

- Consecutive UI ensures the capture of transient events on any single bit.
- Eye pattern measurement compliant for PCI Express, Serial ATA, USB 2.0, and Serial Attached SCSI.
- Trigger jitter is eliminated, giving a measurement jitter that is 7x lower than traditional methods of measuring eye patterns.

- Fully programmable clock recovery algorithm, including first- and second-order PLL models, provides compliance to all existing standards and allows the modeling of specific receiver types.
- Clock recovery modes for PCI Express, DVI/HDMI, and "GOLDEN" PLL.
- Fast update rate for both electrical and optical signals with reference receiver.



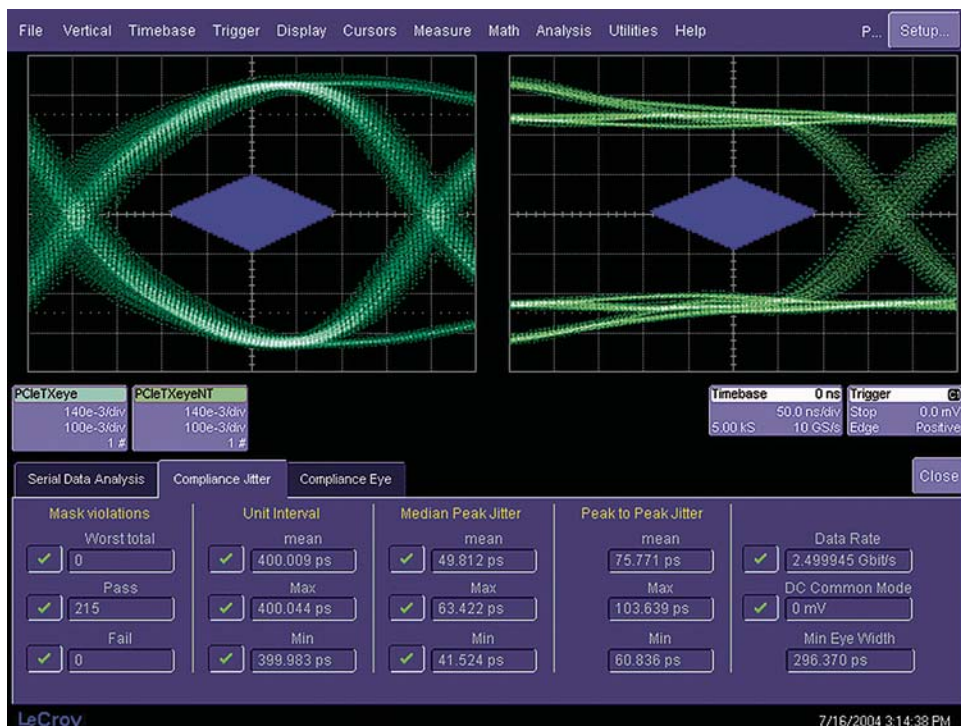
The original bit sequence is stored along with the eye pattern, allowing the user to locate the exact bit or bits that caused a mask failure. This type of analysis pinpoints the source of mask failures, speeding up the debugging process. The display can be set to show any number of bits around a specific violation up to the total acquisition so specific bit patterns can be recognized. A table of violations and bit locations is also available.

The Cleanest Eye Patterns Possible

Eye violation location displays individual bits that violate the eye mask boundaries. The SDA measures eye patterns on consecutive unit intervals of the data stream under test. The original waveform is indexed by the software so that the parts of the overall waveform that violate the mask boundaries, when formed into an eye pattern, can be identified by the particular bit that caused them. The signal waveform around the failed bit is displayed, and relationships between the failure and adjacent bits can be easily seen. A second channel from the instrument can also be displayed and time aligned with the signal under test to locate relationships between failures and other signals in the system under test.

Standards Compliance

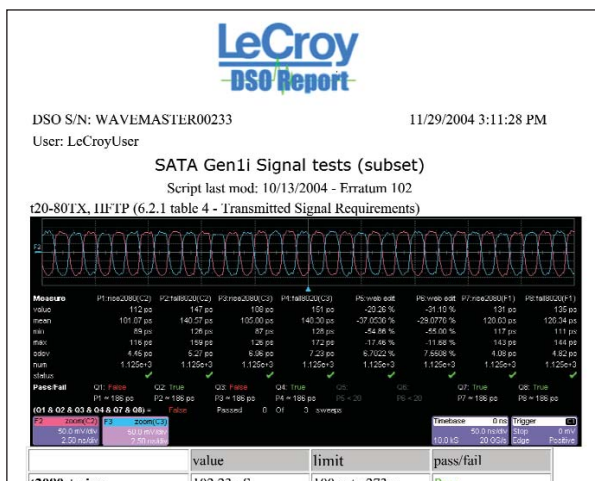
The SDA 11000 offers a growing list of compliance packages to support everything from USB 2.0 to PCI Express. These optional packages enhance the basic analysis and debug capabilities of the SDA by adding specific compliance measurements and displays. Simple single-button operation can be invoked to perform an entire set of measurements and to display all results, including a pass/fail indicator. LeCroy continues to add new measurements to the SDA to support current and emerging serial data standards.



The SDA-PCIE software option for the SDA implements PCI-SIG® compliant eye pattern and jitter measurements. The software measures both systems and add-in cards.

SDA-SATA Validation and Debugging Tools

The SDA-SATA software package for the SDA 11000 provides an extensive set of validation/verification and debug tools written in accordance with SATA Gen1 (1.5 Gb/s) and SATA Gen2 (3 Gb/s) electrical specifications. Covered SATA test modes include Internal (1i/2i mode), Short Backplane and External Desktop Applications (1x/2x mode), and Extended, System-to-System Applications.



SDA-SATA includes Advanced Report Generation.

Leading Features:

- Extensive support for Gen1 and Gen2 SATA specifications
- Automated test report generation
- Flexible, powerful suite of test tools for PHY layer
- Amplitude, timing, and jitter measurements
- Integrated/open user interface
- Clock recovery option supports all SATA Gen2 jitter requirements.
- Data-to-data jitter measurement mode for SATA Gen1
- Instrument support for Sigtest

In addition to standard eye pattern tests for Gen1, the SDA-SATA solution provides a complete set of amplitude and jitter measurements as defined in the Serial ATA Gen2 specification. These robust capabilities make SDA-SATA the only commercially available automated test suite that meets the requirements for both Gen1 and Gen2 Serial ATA transmitter compliance testing.

Specifications

Vertical System

Analog Bandwidth @ 50 Ω (-3 dB)	11 GHz on 2 Ch, 6 GHz on 4 Ch
Rise Time, 10-90% (typical)	< 40 ps in 11 GHz mode
Input Channels	4
Bandwidth Limiter	25 MHz; 250 MHz; 500 MHz–4 GHz Adjustable (6 GHz mode)
Input Impedance	50 Ω \pm 2.0%
Input Coupling	DC, GND
Maximum Input Voltage	\pm 4 V _{peak}
Vertical Resolution	8 bits; up to 11 bits with enhanced resolution (ERES)
Sensitivity	2 mV–1 V/div (fully adjustable in 6 GHz mode, < 10 mV/div through zoom)
DC Gain Accuracy	\pm 1.5% of full scale
Offset Range	2 mV–194 mV/div: \pm 750 mV; 196 mV–1 V/div: \pm 4 V
Offset Accuracy	\pm (1.5% of full scale +1.5% of offset value +2 mV)

Horizontal System

Time per Division Range	6 GHz mode 20 ps/div – 10 s/div	11 GHz mode 10 ps/div – 50 μ s/div (Std. memory) 10 ps/div – 100 μ s/div (-L memory) 10 ps/div – 500 μ s/div (-XL memory)
Math and Zoom Traces	8 independent zoom and 8 math/zoom traces	
Sample Rate and Delay Time Accuracy	\pm 1 ppm over less than 10 interval (typical)	
Jitter Noise Floor	< 350 fs rms measured with 35 ps rise time (typical)	
Trigger and Interpolator Jitter	< 2 ps rms (typical)	
Channel-Channel Deskew Range	\pm 9 x time/div. setting, or 25 ns, whichever is larger	

Acquisition System

Single-Shot Sample Rate/Ch	40 GS/s on 2 Ch; 20 GS/s on 4 Ch
Max. Random Interleaved Sampling (RIS)	200 GS/s (RIS only in 6 GHz mode)
Maximum Trigger Rate	166,667 waveforms/second
Intersegment Time	\leq 6 μ s

Memory Options	Length (Mpts)		Max. Acquisition Segments; Sequence Mode	
	4 Ch Mode	3 or 2 Ch Mode	4 Ch Mode	3 or 2 Ch Mode
Standard	8	16	5000	7500
SD11-XL	50	100	20,000	7500
SD11-L	16	32	10,000	7500

Acquisition Processing

Averaging	Summed Averaging to 1 million sweeps; Continuous Averaging to 1 million sweeps
Enhanced Resolution (ERES)	Up to 3 additional bits with enhanced vertical resolution
Envelope (Extrema)	Envelope, floor, or roof for up to 1 million sweeps

Triggering System

Modes	Normal/Auto/Single/Stop
Sources	Any input channel, External Ext X10, Ext \div 10, or line; slope and level unique to each source (except line trigger and C1/C4 in 11 GHz mode)
Coupling Mode	DC
Pre-trigger Delay	0–100% of memory size (adjustable in 1% increments)
Post-trigger Delay	the smaller of 0–10,000 divisions or 86400 seconds
Hold-off by Time or Events	From 2 ns up to 20 s or from 1 to 99,999,999 events
Internal Trigger Range	\pm 5 div from center
External Trigger Input Range	Aux (\pm 0.4 V); Aux X10 (\pm 0.04 V); Aux/10 (\pm 4 V)
Trigger Sensitivity (Edge)	3 Divisions @ 5 GHz; 2 Divisions @ 4 GHz; 1.2 Divisions @ 3 GHz (typical)

Basic Triggers

Edge/Slope/Line	Triggers when signal meets slope and level condition.
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SMART Triggers®

State or Edge Qualified	Triggers on any input source only if a defined state or edge occurred on another input source. Delay between sources is selectable by time or events.
Dropout	Triggers if signal drops out for longer than selected time between 2 ns and 20 s.
Pattern	Logic combination (AND, NAND, OR, NOR) of 5 inputs – 4 channels (2 channels in 11 GHz mode) and external trigger input. Each source can be high, low, or don't care. The High and Low level can be selected independently. Triggers at start or end of the pattern.

SMART Triggers with Exclusion Technology

Glitch	Triggers on positive or negative glitches with widths selectable from 600 ps to 20 s or on intermittent faults.
Signal or Pattern Width	Triggers on positive or negative pulse widths selectable from 600 ps to 20 s or on intermittent faults.
Signal or Pattern Interval	Triggers on intervals selectable between 2 ns and 20 s.

Setup Storage

Front Panel and Instrument Status	Store to the internal hard drive/floppy drive or to a USB-connected peripheral device.
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CPU

Processor	Intel Pentium 4 @2.53 GHz or better
Processing Memory	Up to 2 Gbytes
Realtime Clock	Dates, hours, minutes, seconds displayed with waveform. SNTP support to synchronize to precision internet clocks.

Interface

Remote Control	Via Windows Automation or via LeCroy Remote Command Set
GPIB Port (Optional)	Supports IEEE – 488.2
Ethernet Port	10/100Base-T Ethernet interface
Floppy Drive	Internal, DOS-format, 3.5" high-density
USB Ports	4 USB 2.0 ports support Windows-compatible devices
External Monitor Port Standard	15-pin D-Type SVGA compatible
Parallel Port	1 standard

Environmental

Temperature (Operating)	+5 °C to +40 °C including floppy disk and CD-ROM drives
Temperature (Non-Operating)	–20 °C to +60 °C
Humidity (Operating)	5% to 80% relative humidity (non-condensing) up to +30 °C. Upper limit derates to 25% relative humidity (non-condensing) at +40 °C.
Humidity (Non-Operating)	5% to 95% relative humidity (non-condensing) as tested per MIL-PRF-28800F
Altitude (Operating)	Up to 10,000 ft. (3048 m) at or below +25 °C
Altitude (Non-Operating)	Up to 40,000 ft. (12,192 m)
Random Vibration (Operating)	0.31 g _{rms} 5 Hz to 500 Hz for 15 minutes in each of three orthogonal axes
Random Vibration (Non-Operating)	2.4 g _{rms} 5 Hz to 500 Hz for 15 minutes in each of three orthogonal axes
Functional Shock	20 g peak half sine 11 ms pulse; 3 shocks (positive and negative) in each of three orthogonal axes; 18 shocks total

Power Requirements

	100–240 VAC at 50/60/400 Hz; 200–240 VAC at 50/60 Hz; Automatic AC Voltage Selection Max. Power Consumption: < 800 VA (800 W)
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Physical Dimensions

Dimensions (HWD)	310 mm x 447 mm x 500 mm; 12.2" x 17.6" x 19.7" (height excludes feet)
Weight	27 kg; 59 lbs.
Shipping Weight	36 kg; 80 lbs.

Certifications

	CE Compliant; UL and cUL listed; Conforms to EN 61326 (for EMC); EN 61010, UL 61010B-1 and CSA C22.2 No. 1010.1 (for safety)
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Warranty and Service

	3-year warranty; calibration recommended annually. Optional service programs include extended warranty, upgrades, and calibration services.
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STANDARD

Advanced Serial Data Analysis Tools

Eye Diagram

bit rate	eye timing
pattern detect	eye crossing
Tx density	extinction ratio
mask test with violation locator	average power
eye amplitude	

Clock Recovery

standard PLL settings (FC GOLDEN, PCI Express, DVI, Custom)	number of poles natural frequency damping factor
custom filter settings	

Jitter Analysis

jitter wizard	synchronous N-cycle with bit
edge to reference (data to clock)	pattern display
edge to edge (data to data)	bathtub curve
conventional	jitter histogram
effective	filtered jitter
MJSQ	periodic jitter (Pj) with
basic (Tj, Rj, Dj)	peak frequency listing
Dj breakdown (DDj, Pj, DCD)	TIE clock jitter
advanced (peak-peak and rms)	period jitter
TIE jitter	half-period jitter
ISI plot with bit sequence tracking	cycle-cycle jitter

Math Tools

Display up to four math function traces (F1 – F4). The easy-to-use graphical interface simplifies setup of up to two operations on each function trace, and function traces can be chained together to perform math-on-math.

absolute value	exp (base 10)	product (x)
Auto-correlation	fft (power spectrum,	ratio (I)
function	magnitude, phase,	reciprocal
average (summed)	up to 25 Mpts)	rescale (with units)
average (continuous)	floor	roof
cubic interpolation	histogram of	(sinx)/x
function	2 billion events	sparse function
derivative	integral	square
deskew (resample)	invert (negate)	square root
difference (–)	log (base e)	sum (+)
enhanced resolution	log (base 10)	track graphs
(to 11 bits vertical)	parameter math	trend (datalog) of
envelope	(+, -, *, / of two	1 million events
exp (base e)	different parameters)	zoom (identity)

Measure Tools

Displays any 8 parameters together with statistics, including their average, high, low, and standard deviations. Histograms provide a fast, dynamic view of parameters and wave shape characteristics.

amplitude	last	phase
area	level@ x	risetime (10–90%,
base	maximum	20–80% @level)
cycles	mean	rms
delay	median	std. deviation
Δ delay	minimum	top
duty cycle	narrowband power	width
duration	measurements	time@minimum (min.)
falltime (90–10%,	number of points	time@maximum (max.)
80–20% @level)	+overshoot	Δ time@level
frequency	–overshoot	Δ time@level from trigger
first	peak-to-peak	x@max
histogram parameters	period	x@min

STANDARD

Pass/Fail Testing

Simultaneously test multiple parameters against selectable parameter limits or pre-defined masks. Pass or fail conditions can initiate actions, including document to local or networked files, e-mail the image of the failure, save waveforms, send a pulse out at the front panel auxiliary BNC output, or (with the GPIB option) send a GPIB SRQ.

OPTIONAL

Advanced Customization Package (XDEV)

This package provides a set of tools to modify the scope and customize it to meet your unique needs. Additional capability provided by XDEV includes:

- Creation of your own measurement parameter or math function, using third party software packages, and display of the result in the scope. Supported third party software packages include:
 - VBScript
 - MATLAB
 - Excel
 - Mathcad
- CustomDSO – create your own user interface in a scope dialog box.
- Adding macro of keys to run VBScript files
- Support of plug-ins

Serial Data Compliance Packages

- ENET - Ethernet Test Software Package
- USB - USB 2.0 Compliance Test Software Package
- SATA - SATA Gen1/Gen2 Solution Analysis Package
- AORM - Advanced Optical Recording Measurement Package
- PCI Express

LeCroy M1 Timing Tools

The SDA acquires data, calculates, displays, and analyzes jitter in clock and serial data. A wide variety of measurement tools are available including differential crossing point measurements. Jitter viewing tools include line graph, histogram, jitter spectrum, text, and eye diagram. Available in an advanced or basic version.

LeCroy M1 Timing Tool (Advanced, 1 scope)	LeCROY M1/ADV-1
LeCroy M1 Timing Tool (Advanced, 4 scopes)	LeCROY M1/ADV-4
LeCroy M1 Timing Tool (Basic)	LeCROY M1/BASIC

Present and Future Serial Data Standards Support



Standard	Fixtures	Measurements	Software Options	Web Site
InfiniBand		Rj, Dj, Tj, Eye pattern		www.infinibandta.org
PCI Express	CLB, CBB (available through PCI-SIG)	jitter, eye pattern, SDA-PCIE	SDA-PCIE	www.pci-sig.org
Fibre Channel (133 to 4.25 Gb/s)	OE525 (optical standards)	jitter, Rj, Dj, Tj, eye pattern		www.fibrechannel.org
USB 2.0 (HS signal quality)	TF-USB	HS signal quality (eye pattern)	USB2	www.usb.org
IEEE 1394b (jitter and eye pattern)	QP-SIB, QP-SIG (available from Quantum Parametrics)	eye pattern, Rj, Tj, Dj		www.1394TA.com
SONET/SDH (optical, up to OC48/STM16)	OE555	eye pattern, filtered jitter		telecom-info.telcordia.com
Ethernet 10/100 1000Base-ST, 1000Base-LX	TF-ET TF-ENET TF-10BT	eye pattern, Rj, Tj, Dj	ENET	www.IEEE.org
RapidIO (Parallel/Serial)		eye pattern, Tj, Rj, Dj		www.rapidio.org
Serial Attached SCSI		eye pattern, jitter: Tj, Dj		www.T10.org
100Base-LX4 (XAUI)		eye pattern, jitter: Tj, Dj		www.10gea.org
DVI	TPA-R, TPA-P (available through DDWG)	eye pattern with software clock recovery PLL, rise/fall		www.DDWG.org
HDMI	TPA-R, TPA-P (available through DDWG)	eye pattern with software clock recovery PLL, rise/fall		www.HDMI.org
Serial ATA	TF-SATA	eye pattern, jitter Gen1 (edge to edge), Gen2 (2nd order PLL)	SDA-SATA	www.sata-io.org

Ordering Information

Description	Product Code
4 Ch 11/6 GHz Serial Data Analyzer; 11 GHz, 40 GS/s 16 Mpts in 2 Ch mode; 6 GHz 20 GS/s 8 Mpts in 4 Ch mode	SDA 11000

Included with Standard Configuration

ProLink Adapter SMA; 4 each
ProLink Adapter BNC; 2 each
Printed Getting Started Manual, Operator's Manual
CD-ROMs containing Operator's Manual, Remote Control Manual, Automation Manual and Software Options Manual
CD-ROMs containing Utility Software and Norton Antivirus Software (1 year subscription)
Floppy Disk Drive
CD-ROM Drive
Optical 3-button Wheel Mouse-USB
Standard Ports; 10/100Base-T Ethernet, Parallel, SVGA Video Output, USB
Power Cable (for the country ordered from)
Protective Front Cover
Standard Commercial Calibration and Performance Certificate
3-Year Warranty

Memory Options

32 Mpts/2 Ch, 16 Mpts/4 Ch	SDA11-L
100 Mpts/2 Ch, 50 Mpts/4 Ch	SDA11-XL

Standards Compliance Software Options

SATA Gen1/Gen2 Solution Analysis Package	SDA-SATA
PCI Express Compliance Software Package	SDA-PCIE
Ethernet Test Software Package	ENET
USB 2.0 Compliance Test Software Package	USB2

Software Options

Advanced Optical Recording Measurement Package	AORM
Disk Drive Measurements Software Package	DDM2
Digital Filter Software Package	DFP2
Advanced Customization Software Package	XDEV

Hardware Options and Accessories

1 M Ω Adapter includes PP005A Passive Probe	AP-1M
Keyboard, USB	KYBD-1
ProLink-to-BNC Adapter; 1 each	LPA-BNC
Kit of 4 ProLink BNC Adapters with Case	LPA-BNC-KIT
ProLink-to-SMA Adapter	LPA-SMA
Kit of 4 SMA ProLink Adapters with Case	LPA-SMA-Kit
Oscilloscope Cart with Additional Shelf and Drawer	OC1024
Oscilloscope Cart	OC1021
Removable Hard Drive Package (includes USB, CD-ROM, and spare hard drive)	WM-RHD
Additional Removable Hard Drive	WM-RHD-02
SDA 11000 Hard Shell Transit Case	SDA11-TC1

Probe and Probe Accessories	Product Code
11 GHz Differential Probe System (available Summer, 2005)	D10000PS
WaveLink 7.5 GHz Differential Probe Adjustable Tip Module	D600A-AT*
WaveLink 7 GHz Differential Probe Small Tip Module	D600ST*
WaveLink 4 GHz, 5 V Differential Probe Small Tip	D350ST*
WaveLink 4 GHz Differential Probe Adjustable Tip Module	D300A-AT*
WaveLink ProLink Probe Body	WL600
1 GHz Active Differential Probe ($\div 1$, $\div 10$, $\div 20$)	AP034
7.5 GHz Low Capacitance Passive Probe 500/1000 Ω	PP066
2.5 GHz, 0.7 pF Active Probe ($\div 10$), Small Form Factor	HFP2500
Probe Deskew and Calibration Fixture	TF-DSQ
Ethernet Fixture for 10Base-T	TF-10BT
Ethernet Fixture for 100Base-T/1000Base-T (Includes a Set of 2 Test Fixtures Signals on Twisted Pair Cables (UTP))	TF-ENET
Telecom Adapter Kit 100 Ω , 120 Ω , 75 Ω	TF-ET
Serial ATA Fixture (includes pair of SMA cables)	TF-SATA
Test Fixture for USB 2.0 Testing	TF-USB

Customer Service

LeCroy scopes are designed, built, and tested to ensure high reliability. In the unlikely event you experience difficulties, our digital oscilloscopes are fully warranted for three years.

This warranty includes:

- Calibration after repairs
- No charge for return shipping
- Long term 7-year support
- Upgrade to latest software at no charge

*For a complete probe, order a WL600 Probe Body with the Probe Tip Module.



1-800-5-LeCroy
www.lecroy.com

Local sales offices are located throughout the world.
To find the most convenient one visit www.lecroy.com